

Patent

Attorney Docket No.: 12553/109

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS : Ming Gao YAO et al.
SERIAL NO. : 10/808,149
FILED : March 24, 2004
FOR : METHOD AND SYSTEM OF PARTIAL POTTING
HEAD SLIDER TO HEAD SUSPENSION
GROUP ART UNIT : 2627
EXAMINER : Angel A. CASTRO

M/S: APPEAL BRIEF – PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

ATTENTION: Board of Patent Appeals and Interferences

APPEAL BRIEF

Dear Sir:

This brief is in furtherance of the Notice of Appeal, filed in this case on December 22,
2008.

1. REAL PARTY IN INTEREST

The real party in interest in this matter is SAE Magnetics (H.K.) Ltd. (Recorded March 24, 2004; Reel/Frame 015145 / 0847).

2. RELATED APPEALS AND INTERFERENCES

There are no related appeals.

3. STATUS OF THE CLAIMS

Claims 1-20 are pending. Claims 1-4, 8-11 and 15-17 are rejected and on appeal. Claims 5-7, 12-14, and 18-20 were previously withdrawn. No claims are objected to, cancelled, or allowed. No amendments to the claims were made after the Final Office Action dated September 22, 2008.

The claims in their current form (including those claims under appeal) are presented in The Appendix – Section 8 – Claims on Appeal.

4. STATUS OF AMENDMENTS

The claims listed on page A-1 of the Appendix attached to this Appeal Brief reflects the present status of the claims.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention is directed to attaching a slider to a head suspension. More specifically, the present invention pertains to reducing the amount of adhesive needed to couple

the slider to the head suspension.

The embodiment described in claim 1 generally describes a suspension assembly, comprising a suspension to hold a slider (*e.g.*, paragraph [0016], line 4 – Figure 3, 110) above a data storage medium (*e.g.*, paragraph [0002], line 15 – Figure 1, 104), and a slider fixture (*e.g.*, paragraph [0016], line 3 – Figure 3, 202) formed on the suspension (*e.g.*, paragraph [0003], line 3 – Figure 2, 204) to couple with portions of at least two surfaces of the slider other than a surface facing the data storage medium and other than a surface having a set of connecting pads (*e.g.*, paragraph [0018], line 4 – Figure 5), and an adhesive substance is applied to the portions between the slider and the slider fixture to couple the slider to the slider fixture (*e.g.*, paragraph [0015], line 1-5 – Figure 3, 310).

The embodiment described in claim 8 generally describes a magnetic disk drive, comprising a data storage medium to store data (*e.g.*, paragraph [0002], line 15 – Figure 1, 104), a slider which has a read/write head (*e.g.*, paragraph [0016], line 4 – Figure 3, 110), a suspension to hold the slider above the data storage medium (*e.g.*, paragraph [0003], line 3 – Figure 2, 204), a slider fixture formed on suspension (*e.g.*, paragraph [0016], line 3 – Figure 3, 202) to couple with portions of at least two surfaces of the slider other than a surface facing the data storage medium and other than a surface having a set of connecting pads (*e.g.*, paragraph [0018], line 4 – Figure 5), an adhesive substance is applied to the portions between the slider and the slider fixture to couple the slider to the slider fixture (*e.g.*, paragraph [0015], line 1-5 – Figure 3, 310), and a controller to control movement of the suspension and operation of the read/write head (*e.g.*, paragraph [0003], line 4-8).

The embodiment of described in claim 15 generally describes a method, comprising forming a slider which has a read/write head (*e.g.*, paragraph [0016], line 4 – Figure 3, 110), forming a suspension to hold the slider (*e.g.*, paragraph [0003], line 3 – Figure 2, 204), forming a circuit on the suspension to connect electrically with the slider, forming a slider fixture on the suspension (*e.g.*, paragraph [0016], line 3 – Figure 3, 202) to couple with portions of at least two surfaces of the slider other than a surface facing the data storage medium and other than a surface having a set of connecting pads (*e.g.*, paragraph [0015], line 1-5 – Figure 3, 310), coupling the slider with the slider fixture by applying an adhesive substance to the slider or the slider fixture and electrically connecting the circuit with the slider (*e.g.*, paragraph [0015], line 1-5 – Figure 3, 310).

Figure 1 illustrates a hard disk drive design typical in the art. **Figures 2a-c** illustrates a prior art method for coupling a slider to the suspension of an actuator arm. **Figures 3a-c** illustrate a first formed slider fixture according to embodiments of the present invention. **Figure 4** illustrates alternate embodiments for creating the formed slider fixture according to the present invention. **Figures 5a-c** illustrate a second formed slider fixture according to embodiments of the present invention. **Figures 6a-b** illustrate a third formed slider fixture according to embodiments of the present invention. **Figures 7a-b** illustrate a fourth formed slider fixture according to embodiments of the present invention. **Figures 8a-b** illustrate a fifth formed slider fixture according to embodiments of the present invention. **Figures 9a-b** illustrate a sixth formed slider fixture according to embodiments of the present invention. **Figures 10a-b** illustrate in a graph the testing result of the HGA profile change between partial potting and full potting.

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Claims 1, 3-4, 8, 10-11, 15 and 17 are rejected under 35 U.S.C. § 102(b) as being anticipated by Yamaguchi et al. (hereinafter “Yamaguchi”), US Pat. 5,243,482.

B. Claims 2, 9 and 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamaguchi in view of Coon (hereinafter “Coon”), US Publ. No. 2001/0013993.

7. ARGUMENT

A. Claims 1, 3-4, 8, 10-11, 15 and 17 are not anticipated by Yamaguchi.

Applicants submit the cited references fail to teach or suggest at least “[a] suspension assembly, comprising ... a slider fixture formed on the suspension to couple with portions of at least two surfaces of the slider other than a surface facing the data storage medium and other than a surface having a set of connecting pads” (*e.g.*, as described in claim 1).

The Examiner asserts Yamaguchi discloses the relevant limitations, citing Figures 1, 3 and 5 generally, and column 7, lines 28-30. See Office Action dated 9/22/2008, paragraph 2. Applicants disagree.

Figure 1 of Yamaguchi is a partial cross-sectional view of a magnetic head support mechanism; it does not include references to pads of any sort.

Figure 3 describes, among other things, a slider embodiment 1 comprising finger portions 52, central tongue portion 53, load projection 54 and stepped portion 57. It does not describe at least a slider fixture formed on the suspension to couple with portions of at least two surfaces of the slider other than a surface facing the data storage medium and other than a surface having a set of connecting pads.

Figure 5 describes another view of a slider embodiment wherein the finger portion 52 is connected to step member 55 and coupling member 56. None of these elements describe at least the relevant limitations discussed above at all. Specifically, the Examiner's current rejection has failed to cite at least 1) to a surface having a set of connecting pads and 2) to a slider fixture with portions of at least two surfaces of a slider other than a surface facing a data storage medium and a surface having the set of connecting pads (*e.g.*, as described in claim 1). Indeed, cited Figure 5 does not include reference to any pads at all, and the Examiner does not cite to any purported connecting pads either. Applicants submit the Yamaguchi reference, including cited Figures 1, 3 and 5, fails to describe at least the relevant limitations.

Similarly, Figures 2, 4, and 6 of Yamaguchi fail to teach or suggest the relevant limitations as described in claim 1 as well. For example, Figures 4 and 6 disclose slider 1, magnetic head 2, and "slider floating surface" 10; they do not teach or suggest at least a slider fixture to couple with portions of at least two surfaces of the slider other than a surface facing the data storage medium and other than a surface having a set of connecting pads.

Therefore, since the cited references fail to teach or suggest each and every limitation of claim 1, the current §102 rejections are lacking and should be withdrawn. Applicants submit independent claims 1, 8, and 15 are allowable for at least the reasons described above. Claims 3-4, 10-11, and 17 are allowable for depending from allowable base claims.

B. Claims 2, 9 and 16 are not rendered obvious over Yamaguchi in view of Coon

Coon fails to make up for the deficiencies of Yamaguchi. Specifically, Coon is directed to a flexure slider bonding system; it does not teach or suggest at least a slider fixture formed on

the suspension to couple with portions of at least two surfaces of the slider other than a surface facing the data storage medium and other than a surface having a set of connecting pads” (*e.g.*, as described in claim 1). Indeed, the embodiments described in Coon do not include anything similar to at least the slider fixture described in the claims of the present application. *See* Figures 6-10.

Therefore, Applicants submit dependent claims 2, 9 and 16, depending from independent claims 1, 8, 15, are allowable for at least the reasons described above.

CONCLUSION

Appellants therefore respectfully request that the Board of Patent Appeals and Interferences reverse the Examiner’s decision rejecting claims 1-4, 8-11 and 15-17 and direct the Examiner to pass the case to issue.

The Examiner is hereby authorized to charge the appeal brief fee of **\$540.00** and any additional fees which may be necessary for consideration of this paper to Kenyon & Kenyon Deposit Account No. **11-0600**.

Respectfully submitted,

KENYON & KENYON LLP

Date: February 23, 2009

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APPENDIX

(Brief of Appellants Ming Gao YAO et al.
U.S. Patent Application Serial No. 10/808,149)

8. CLAIMS ON APPEAL

The claims in their current form (including those claims under appeal) are presented below:

1. (Previously Presented) A suspension assembly, comprising:

a suspension to hold a slider above a data storage medium; and

a slider fixture formed on the suspension to couple with portions of at least two surfaces of the slider other than a surface facing the data storage medium and other than a surface having a set of connecting pads; and

an adhesive substance is applied to the portions between the slider and the slider fixture to couple the slider to the slider fixture.
2. (Original) The suspension assembly of claim 1, wherein the adhesive substance is applied as a partial dot on the portion between the slider and the slider fixture.
3. (Original) The suspension assembly of claim 1, wherein the slider fixture has a first side forming plate formed to cover a first side surface of the slider and a second side forming plate formed to cover a second side surface of the slider.

4. (Original) The suspension assembly of claim 1, wherein the slider fixture has a first side forming plate formed to partially cover a first side surface of the slider and a second side forming plate formed to partially cover a second side surface of the slider.
5. (Withdrawn) The suspension assembly of claim 1, wherein the slider fixture has a third forming plate formed to cover a side surface opposite the surface having connecting pads.
6. (Withdrawn) The suspension assembly of claim 1, wherein the slider fixture has a U-shaped forming plate formed to cover a third side surface of the slider and to partially cover a first side surface and a second side surface of the slider.
7. (Withdrawn) The suspension assembly of claim 1, wherein the slider fixture has a first L-shaped forming plate formed to partially cover both a first side surface and a third side surface of the slider and a second L-shaped forming plate formed to partially cover both a second side surface and a third side surface of the slider.
8. (Previously Presented) A magnetic disk drive, comprising:
 - a data storage medium to store data;
 - a slider which has a read/write head;
 - a suspension to hold the slider above the data storage medium;

a slider fixture formed on suspension to couple with portions of at least two surfaces of the slider other than a surface facing the data storage medium and other than a surface having a set of connecting pads;

an adhesive substance is applied to the portions between the slider and the slider fixture to couple the slider to the slider fixture; and

a controller to control movement of the suspension and operation of the read/write head.

9. (Original) The magnetic disk drive of claim 8, wherein the adhesive substance is applied as a partial dot on the portion between the slider and the slider fixture.

10. (Original) The magnetic disk drive of claim 8, wherein the slider fixture has a first side forming plate formed to cover a first side surface of the slider and a second side forming plate formed to cover a second side surface of the slider.

11. (Original) The magnetic disk drive of claim 8, wherein the slider fixture has a first side forming plate formed to partially cover a first side surface of the slider and a second side forming plate formed to partially cover a second side surface of the slider.

12. (Withdrawn) The magnetic disk drive of claim 8, wherein the slider fixture has a third forming plate formed to cover a third side surface opposite the surface having connecting pads.

13. (Withdrawn) The magnetic disk drive of claim 8, wherein the slider fixture has a U-shaped forming plate formed to cover a third side surface of the slider and to partially cover a first side surface and a second side surface of the slider.

14. (Withdrawn) The magnetic disk drive of claim 8, wherein the slider fixture has a first L-shaped forming plate formed to partially cover both a first and a third side surface of the slider and a second L-shaped forming plate formed to partially cover both a second and a third side surface of the slider.

15. (Previously Presented) A method, comprising:

- forming a slider which has a read/write head;
- forming a suspension to hold the slider;
- forming a circuit on the suspension to connect electrically with the slider;
- forming a slider fixture on the suspension to couple with portions of at least two surfaces of the slider other than a surface facing the data storage medium and other than a surface having a set of connecting pads;
- coupling the slider with the slider fixture by applying an adhesive substance to the slider or the slider fixture; and
- electrically connecting the circuit with the slider.

16. (Original) The method of claim 15, further comprising applying the adhesive substance as a partial dot on at least one side surface of the slider or on suspension.

17. (Original) The method of claim 15, further comprising:
forming a first side forming plate of the slider fixture to partially cover a first side surface of the slider; and
forming a second side forming plate of the slider fixture to partially cover a second side surface of the slider.
18. (Withdrawn) The method of claim 15, further comprising forming a third side forming plate formed to cover a side surface opposite a surface having connecting pads.
19. (Withdrawn) The method of claim 15, further comprising forming a U-shaped forming plate to surround a third side surface of the slider and to partially cover a first side surface and a second side surface of the slider.
20. (Withdrawn) The method of claim 15, further comprising:
forming a first L-shaped forming plate to partially cover both a first and a third side surface of the slider; and
forming a second L-shaped forming plate to partially cover both a second and a third side surface of the slider.

9. EVIDENCE APPENDIX

No further evidence has been submitted with this Appeal Brief.

10. RELATED PROCEEDINGS APPENDIX

Per Section 2 above, there are no related proceedings to the present Appeal.